

## **B06-O16**

### **BENTHIC COMMUNITY DIVERSITY AND STRUCTURE IN RELATION TO SEDIMENT PROCESSES IN THE CHUKCHI SEA**

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The Russian-American Long-term Census of the Arctic (RUSALCA) is a decade-long international collaboration involving U.S. and Russian scientists studying the productive Chukchi shelf shared by both countries. Our contributions to the collaborative project have included documentation of benthic infauna in relation to environmental factors such as grain size, sediment organic carbon content, the stable oxygen and nitrogen isotope composition of that organic matter, sediment chlorophyll, and sedimentation rates, measured using the radionuclides  $^{210}\text{Pb}$  and  $^{137}\text{Cs}$ . Sediment characteristics exert a strong control on benthic infaunal abundance, community structure and diversity. Sedimentation patterns show that areas of low sedimentation are located in shelf regions with high current flow (e.g. Herald Canyon), while other regions where sedimentation has been uncertain, such as Long Strait, have relatively high sedimentation rates, implying low current flow. Overlain on these environmental controls are changes over the past two decades in characteristics of the sediments, as well as movement of the most productive benthic communities northward from Bering Strait, shifts in grain size, and changes in the carbon isotopic composition of organic matter in surface sediments to more positive, heavier isotope values, particularly in coastal sediments to the north of Chukotka. These changes imply shifts in water column hydrography, but seasonal sea ice declines have also been significant. Stable oxygen isotope measurements show a significant shift to meltwater in summer Chukchi Sea waters over the past decade. This water column shift has implications for the available capacity of nutrients to support biological production and for community responses to ocean acidification with linkage to the benthic community.